The Environmental Assessment and Planning in Ontario Project

Case Report No. 4

Waterloo's West Side Story: Planning for the Laurel Creek Watershed

by

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Problems have arisen at the intersection of environmental assessment and land use planning in Ontario for two main reasons. Established land use planning practices have failed to satisfy growing environmental concerns about individual undertakings and, more importantly, their cumulative effects. At the same time, environmental assessment, which has evolved into an approach to planning that requires greater environmental sensitivity, now both overlaps inefficiently with some land use planning decisions, and is in some ways attractive for broader application in planning decision making.

These two factors have led to two quite different, but perhaps ultimately complementary pressures for reform. The first is to apply environmental assessment requirements more broadly in land use planning decision making. The second is to provide for a more efficient rationalization of processes in the relatively small area where environmental assessment and land use planning requirements already overlap.

The Environmental Assessment and Planning in Ontario Project, funded by the Social Sciences and Humanities Research Council of Canada, aims to develop a better understanding of the existing problems and the needs and options for reform. The work completed thus far includes case studies of major controversies and responses to these controversies. *Waterloo's West Side Story: Planning for the Laurel Creek Watershed* is the case report of one of these studies. For other case studies and publications of the project, contact the project coordinator and general editor of the case study series, Dr. Robert Gibson, Department of Environment and Resource Studies, University of Waterloo.

The Study of Planning for the Laurel Creek Watershed

The City of Waterloo and the larger Regional Municipality of Waterloo have been leaders in efforts to introduce environmentally responsible land-use planning. For the city, the first detailed attempt to integrate environment into planning for urban expansion centred on the west side of the city in the headwaters of Laurel Creek. In response to a variety of pressures, the city in partnership with the region, the Grand River Conservation Authority and two provincial ministries, initiated the Laurel Creek Watershed Study. This study introduced an ecosystem approach to long term planning for an area destined for conversion from agriculture to suburban housing. While the resulting effects on planning decisions may not satisfy all environmental sustainability objectives, the Laurel Creek case represents an important step toward environmental enlightenment in land use planning.

The Author

This case study was prepared by Lora Flaherty, a graduate in Environment and Resource Studies at the University of Waterloo who now works with EnviroTech Associates.

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Ecological Planning for the Laurel Creek Watershed

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Introduction

The Waterloo west side story is the account of one city's first detailed attempt to integrate environment into planning for urban expansion. The initiative, which began in 1985, was also precedent setting for Ontario and illustrates the unfolding of a framework for ecological planning and restoration.

The story revolves around the rural west side of the City of Waterloo, which was under development pressure because the city's population was expected to increase, mainly due to migration from the Greater Toronto Area.[1] In response, several developers requested the approvals required to build housing subdivisions on the west side lands. These requests stirred strong public concerns regarding the need for growth, the protection of environmental lands, the increased flooding potential and the impact of west side development on the rest of the city and on the ecosystem.

The municipal government was caught in the middle. Faced with public pressure and committed to sustainable development, the city decided to defer decision making pending completion of two studies of the area. The first was on growth management; the second was the Laurel Creek Watershed Study (LCWS).

The LCWS introduced an ecosystem approach to long term planning and development for the area. Generally, an ecosystem approach is one which focuses on the interrelationships among all components (natural, physical, economic, social and cultural) of a system. It incorporates the concepts of carrying capacity, resilience, sustainability, and humans as part of nature, and recognizes limits to human activities that use environmental resources and sink capacities. It also emphasizes the importance of other generations and species. An ecosystem approach is usually based on a natural geographic unit such as a watershed, rather than on political boundaries, and it is understood that decisions made in one area affect all others.[2]

Initiated in January 1991, the LCWS was a co-operative project of the City of Waterloo in partnership with the Region Municipality of Waterloo, the surrounding townships, the Grand River Conservation Authority (GRCA), the provincial Ministry of Natural Resources (MNR) and Ministry of the Environment and Energy (MOEE).

The study's basic purpose was to help achieve sustainable development of the Laurel Creek headwaters area, maximizing benefits to the natural and human environments on a watershed basis.[3] More immediately, the study was undertaken to address concerns regarding uncontrolled growth and to resolve conflicts with respect to downstream water

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[1] Brian Trushinski, City of Waterloo Planning and Public Works Department, personal communication, November 8, 1993.

[2] See Royal Commission on the Future of the Toronto Waterfront (David Crombie, Chair), *Regeneration - Toronto's Waterfront and the Sustainable City: Final Report* (Toronto: RCFTW, December 1991); and Ray Tomalty, Robert Gibson, Donald Alexander and John Fisher, *Ecosystem Planning for Canadian Urban Regions* (Toronto: ICURR, 1994).

[3] Grand River Conservation Authority, *Laurel Creek Watershed Study: Final Report* (Waterloo: January 1993).

management. Strong public pressure existed for the protection of the environment and for addressing such issues as the high infrastructure costs and associated tax increases that had accompanied other recent development in the city. Accordingly, the study aimed to minimize long term cost, reduce conflict and to preserve environmentally significant areas.

Theoretically, a watershed study would follow the hydrologic cycle to integrate consideration of the physical, chemical and biological processes of the ecosystem, thereby providing a broad understanding of an ecosystem's function and present condition. This information would then be used to determine and outline the rules for subsequent land use planning. The study would broadly define the location and type of growth that would be acceptable, and the environmental considerations that ought to be taken into account when development plans are prepared, reviewed and implemented. With knowledge of these constraints and opportunities at the outset of planning, subdivision proponents and other interested parties would be able to proceed more efficiently, with fewer unexpected conflicts and a greater potential for successful environmental preservation.

The comprehensive LCWS was assigned the following tasks:

- identify existing environmental and water resource processes;
- identify the impacts due to existing uses in the watershed;
- identify the potential impacts of land use changes; and
- develop a management strategy for the watershed.

Although not initially apparent, it quickly became clear that for the study to be effective, its recommendations would require integration into the regional and municipal planning policies. Waterloo became the first city in Ontario to have environmental criteria incorporated into its official plan.[4]

Although uncontrolled growth and environmental protection were the significant issues that led to the LCWS, the fact that the Waterloo west-side story occurred raises important issues regarding the public's trust in the government, today's legislation and in the standard planning method's ability to maintain what is important to them: a healthy environment and a certain quality of life. This story evolved because Waterloo residents were not satisfied with the existing decision-making process or its results. The LCWS was the approach taken by the city and associated stakeholders to resolve this dissatisfaction.

The purpose of this paper is to examine the history of the LCWS, its success in achieving its purpose and objectives, and its feasibility as a model for adoption by municipalities facing similar challenges. The paper also explores the lessons that can be learned from this story for planning reform, for the design and implementation of future watershed studies, and for the actors involved in the watershed process.

The information collected for this report was obtained from

- the background information prepared by the City of Waterloo for the Ontario Municipal Board's June 1992 hearing;
- pertinent City of Waterloo planning reports and newspaper articles;
- Sewell Commission report;[5]
- Crombie Commission report;[6]
- the Laurel Creek Watershed Study;[7] and

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[4] Brian Turnbull, mayor, City of Waterloo, personal communication, January 10, 1994.

[5] Commission on Planning and Development Reform in Ontario (John Sewell, Chair), *New Planning for Ontario: Final Report of the Commission on Planning and Development Reform in Ontario* (Toronto: Queen's Printer for Ontario, June 1993).

[6] Royal Commission on the Future of the Toronto Waterfront, *Regeneration* (see note 2, above).

[7] See note 3

- the MNR and MOEE watershed planning information series.[8]

and by interviewing

- David Cooper, Ontario Ministry of Natural Resources;
- Liz Leedham, public participation coordinator, LCWS;
- Chris Gosslin, Regional Municipality of Waterloo;
- Paul Puopolo, president, Planning Initiatives;
- Jock McKay, K-W Field Naturalists;
- Virgil Martin, Regional Municipality of Waterloo;
- Lorrie Minshall, Grand River Conservation Authority;
- Brian Trushinski, City of Waterloo Planning and Public Works Department; and
- Brian Turnbull, mayor, City of Waterloo.

The report begins with a basic overview of the LCWS story, followed by a detailed chronology. It then examines the changes created in the planning process by the Laurel Creek initiative, the importance of watershed studies, and the effectiveness of these studies in achieving their objectives. Finally, the report investigates some of the lessons to be learned from the LCWS experience.

A Brief Historical Overview

In the spring of 1985, the Regional Municipality of Waterloo revised its population forecast. Developers studied the new projections, calculated that there would be a demand for additional housing and began to prepare applications for developing the rural west side of the City of Waterloo. To permit development, the land-use designation of the west side lands would have to be changed from Rural to Urban both in the region's official policies plan, which was currently under review, and in the City of Waterloo's official plan.

The applications and proposed zoning changes sparked a strong public outcry. Many citizens were concerned about the implications of rapid urban expansion, fearing the developments would bring new infrastructure costs and increased taxes as well as further degradation and loss of natural areas, and overall declines in the quality of life. There were also concerns about increased flooding potential. Suburban developments typically increase the area covered by impermeable surfaces (roofs and pavement). If this were allowed to happen in the headwaters of Laurel Creek and its tributary, Clair Creek, the likely result would be a significant increase in the volume and velocity of the water flowing into and through the creek system in periods of heavy rainfall or rapid snow melt. Both citizens and municipal officials feared that the capacity of the creek and its reservoirs could be exceeded and lead to downstream flooding, including in the downtown area of Waterloo which is located in a floodplain.

In response to these concerns, the city and the region jointly initiated a study to determine whether there was justification for designating the west side lands as Urban. In 1986, after pressure from one of the developers, the decision on the land's designation was deferred to some future date; the area did not receive a settlement policy designation in the revised region official policy plan. The status of the land remained in limbo.

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[8] See especially, Ontario Ministry of Environment and Energy/Ontario Ministry of Natural Resources, *Water Management on a Watershed Basis: Implementing an Ecosystem Approach* (Toronto: MOEE/MNR, June 1993), 32pp.

Meanwhile, acting on its mandate for flood control, the GRCA began to push for the development of a master drainage plan for the west side in anticipation of potential development. In 1987, the authority established a technical committee to determine what the impact would be on the downstream portions of the Clair and Laurel Creek system, especially in the Uptown Waterloo area, if impermeable surfaces increased upstream due to development of the west side lands. In 1988, the committee concluded that development on the Clair Creek Watershed would have greater potential to generate downstream impacts than development in the Laurel Creek Watershed. However, for any development upstream, it would be necessary to develop strategies for controlling stormwater runoff for every time it rained, instead of adopting the usual approach of just ensuring sufficient channel capacity for a five to 100 year storm.

Also in 1988, the GRCA developed plans to channelize Laurel Creek from Erb Street to Weber Street in order to accommodate a 100 year flood. The project died at the planning stage due to strong opposition from residents of the adjacent Brighton Yards Co-op and Black Willow Condominiums and due to the requirements of the Municipal Sewage and Water Projects Class Environmental Assessment to consider alternatives such as reduction of upstream storm water flows.

The west side designation study, which had begun in 1986, found that development of the west side lands would be required to meet the anticipated population growth. This conclusion was affirmed by Waterloo council in July 1988. Only the northwest corner of the lands was to be excluded due to environmental uncertainties. In October 1988, as part of the process leading to official redesignation, the region held a public meeting under the *Planning Act* on matters related to the west side designation study. At the meeting, critics of the proposed redesignation stressed concerns about the costs of rapid growth and protection of the environment.

In the municipal election later that year, Waterloo voters expressed their dissatisfaction with the status quo. Brian Turnbull was elected as the new mayor of Waterloo, in part due to his expressed environmental commitments and sensitivity to the costs of rapid growth. After reviewing information from the October meeting regarding the west side lands, the new council decided it would not consider expanding the urban settlement designation until the issues of growth and environment had been addressed more adequately. The council decided it would first address the issues surrounding growth, and in 1989, established a growth strategy committee whose mandate was to define appropriate growth and outline a growth strategy.

Following through on its environmental platform, Waterloo council adopted an "environment first" approach in October 1989. In January 1990, in an attempt to address all watershed concerns comprehensively, city council voted to endorse the idea of a "resource management plan" for the Laurel Creek Watershed.

By early spring of 1990, the developers were feeling frustrated with the lack of progress on the redesignation of the west side lands. They decided to use the formal adversarial process under the *Planning Act* to force a decision on the matter and requested referral of the west side redesignation issue to the Ontario Municipal Board (OMB). However, because of a backlog of cases before the board, no immediate decision on hearing date was forthcoming.

In August 1990, after 18 months of investigation, Waterloo's Growth Strategy Committee presented its recommended policy to city council. Council approved the growth strategy proposals in October and turned to the second public concern – the environment. It was decided that approaching the issue in a piecemeal fashion would be ineffective due to the

interdependence of the environment and other issues. The favoured approach was an integrated watershed study. Council initiated Laurel Creek Watershed study in January 1991 and February they again deferred redesignation of the west side lands until information was available from the new study.

No leisurely approach to the study would be possible. In July 1991, the OMB decided upon a June 1992 hearing date for the requested decision on west side redesignation. This put significant pressure on the city to have the LCWS completed by this date so that the city could present a well supported position on appropriate redesignation policies for the area. Facing this time pressure, and wishing to avoid entirely the cost and unpleasantness of adversarial hearings, the city initiated negotiations with the developers in April 1992. All but two of the developers agreed to withdraw their appeals until September 1993 on the condition that the west side lands would be designated as Urban.

When the OMB hearing commenced on June 2, 1992, it addressed only specific lands owned by Trillium Estates Ltd. The city had managed to complete the LCWS to a draft final report stage. The region and city went before the board requesting that the west side lands be designated Urban, subject to adoption of certain policies including incorporation of the LCWS' conclusions into the Regional Official Policies Plan. These requests were approved by the OMB in September 1992. The OMB added a condition that subdivision approvals could not be finalized until the region had money for capital servicing and a master drainage plan was in place. It also added a new policy designating the northwest corner of the city as a special policy area, within the settlement policy A, but requiring a special environmental impact analysis (entitled a sensitive landscape study) before being designated as Urban in any of the city's district plans.

The final version of the LCWS was received by council in January 1993. The next step for council was to incorporate appropriate LCWS recommendations into the city's official plan. City staff proposed that the amendment should be carried out in two phases. Phase 1 would focus on the undeveloped west side lands, where the developmental pressures were greatest. Phase 2, which would be started only after completion of phase 1, would pertain to the rest of the city. The phase 1 official plan amendment (#16), which incorporated the LCWS recommendations, was approved by city council in March 1993. The open space designations for all applicable west side lands were included here.

In October 1993, a second OMB hearing was held to address land use designations for the remaining west side lands. A sizeable portion was designated residential and the area along Erb Street West was designated commercial and industrial.

Subsequently, a committee was established to oversee the implementation of the LCWS recommendations. At the time of writing, deliberations were continuing on the official plan amendment for phase 2.

The Legal Context

Two provincial laws provide the main legislative framework for this story: the Ontario *Environmental Assessment Act* and the *Planning Act.*

The *Environmental Assessment Act* was passed in 1975 in response to public concerns about inadequate consideration of environmental consequences in planning and

development decisions. Under the Act an assessment must be performed prior to approval of any new enterprise, activity, proposal, plan or program undertaken by a public body (unless exempted) and by designated private sectors proponents. To streamline the process for relatively minor undertakings, Ontario introduced "class environmental assessments" which allow for quicker reviews and approval of undertakings in certain categories. Most municipal government road, water and sewer undertakings are subject to the class assessment process. But in all cases, proponents must assess the need for the project, alternative ways of meeting this need, and the predicted environmental effects involved.

A significant weakness of this Act is that environmental impacts are typically assessed only on a project by project basis. As a result, the Act has not provided an effective tool for addressing cumulative effects. As large portion of current environmental damage is the result not of single major impacts but of the combined effects of many, individually insignificant activities over time. Incremental, project-centred decision making may actually contribute to such cumulative effects.

The Ontario *Planning Act* establishes a process for planning and development, but it contains limited guidance on the content. The Act does mention environmental concerns. Section 3 allows the province to issue policy statements to guide municipal planning on matters of provincial interest, including the protection of the natural environment and areas of significance. At the municipal level, section 1(h) states that municipal official plans are to have regard to relevant social, economic and environmental matters. But the Act does not provide any specific requirements for environmental planning and so far section 3 policies have not addressed environmental protection issues other than those involving wetlands and floodplains. Overall, the *Planning Act* permits environmental planning, but does not appear to encourage it.

This neither the *Environmental Assessment Act* nor the *Planning Act* is well designed for assuring broad environmentally responsible planning with careful attention to cumulative effects. At the same time, requirements of the two Acts may overlap inefficiently. An environmental assessment may be required, for example, for roads and other infrastructure projects already approved in principle in official plan amendments. This lack of coordination can lead to time delays and redundancy, including two streams of public involvement.

Planning process delays have also resulted from slow reviews by various provincial agencies that want to ensure that their legal and policy requirements are being met. If these policies have not been adequately addressed, review delays are further exacerbated by the requirements for plan revisions and reconsideration.

The lack of clear provincial guidelines on environmental priorities, and the tendency of each municipality to take a different approach to environmental matters (depending on political will, community priorities, resources and expertise), has led to a varying degrees of environmental protection.

A watershed study facilitates more comprehensive, environmentally responsible planning by determining current overall conditions and providing grounds for estimating what cumulative impacts an area can withstand without significant loss of ecosystem integrity when further development occurs. Delays are minimized if provincial agencies are involved from the beginning of the watershed process to ensure that their mandates are being met. The planning process may also be streamlined if the study provides a basis for early agreement on what type of development may occur in which locations. It appears that a watershed study may potentially rectify at a municipal level, many of the inadequacies of the

current environmental assessment and planning laws. At present, however, there are no legal obligations to carry out watershed studies in areas facing development interest.

Detailed Chronology

The Initiation of the West Side Controversy

The Waterloo west side story commenced in March 1985, when the Regional Municipality of Waterloo (RMOW) initiated a periodic review of the Regional Official Policies Plan (ROPP). The ROPP is a broad planning policy document, implemented to provide guidance to the municipalities within the region. It outlines the general direction of response to municipal issues such as housing, transportation and environment. Also included are broad land use designations.

Lands are classified in one of four categories – A, B, C or E. Land designated A represents existing urban and future expansion areas. In lands designated B, higher intensity is encouraged. Classification C represents city cores and E lands are those primarily rural in character (greenspace is designated E). At the time of the official plan reassessment, the west side of the City of Waterloo (generally west of Erbsville Road and Beaver Creek Road) was designated as settlement policy E.

In preparation for its re-evaluation of municipal policies, the RMOW also undertook a review of its population forecast. It was this review which catalyzed the west side events.

Trillium Estates Ltd., a prominent player in this story and a significant land owner of approximately 757 acres on the western side of the City of Waterloo, was in the process of developing the Beechwood West area, located just south and east of the west side lands (generally between Fischer-Hallman and Erbsville Rd., south of Beaver Creek Rd and north of Erb St.), when the ROPP review began. The company had submitted a draft plan for its Neighbourhood 2 subdivision (approximately 296 acres), and had an additional 200 to 400 acres of land zoned as Urban for its planned Trillium Neighbourhood 3.

After examining the revised population forecasts, Trillium calculated that there would be demand for additional housing to meet the needs of the increased population and therefore petitioned the RMOW in August 1985, to redesignate 100 to 140 acres adjacent to the planned Neighbourhood 3 subdivision from Rural (Settlement Policy E) to Urban (Settlement Policy A). Trillium viewed this extension as a logical addition to its proposed Neighbourhood 3.[9] Portions of this additional acreage were located in what is known as the west side lands.

The RMOW deferred consideration of the extension proposal pending the completion of a study by regional and area municipal staff evaluating future land needs in the City of

[9] Correspondence from Ian MacNaughton on behalf of Trillium Estates Ltd., to the City of Waterloo, August 2, 1985.

Waterloo. The city and region jointly initiated the west side designation study, the objective of which was to determine whether there was justification for designating the west side lands as Urban.[10]

Not easily deterred, Trillium, in September 1985, asked the City of Waterloo to recommend to the RMOW that the 100 to 140 acres north and west of the Beechwood Neighbourhood 3 area not to be designated as Settlement Policy E in the revised ROPP. They further asked council to recommend that these lands be designated as Settlement Policy A.

City Council turned down this request because it did not want to give Trillium an advantage over other developers and, more importantly, because Council had unresolved concerns regarding sanitary sewer servicing for the west side lands. The planning, programming and financing of capital services for the west side had not yet been considered. Council concluded that a comprehensive study on sewer services would have to be completed before a commitment to potential development could be made, because the feasibility and cost of the facilities would affect the design and conditions of subdivision approval.

Council did, however, recognize a potential shortage of housing within the present urban boundaries. It therefore recommended that the ROPP, which was still under review, be amended to expand urban settlement boundaries to accommodate growth until the year 2011. With this amendment, Regional Council adopted the ROPP on October 17, 1985. The ROPP was then circulated by the Ministry of Municipal Affairs (the agency which coordinates government review of regional plans) for comments.

Trillium saw a valuable opportunity about to slip away. If the ROPP were adopted by the Minister of Municipal Affairs without the requested change in the settlement policy, Trillium would be required to go through a lengthy process, with many possible delays, to obtain the desired land-use designation. Most of this could be avoided if Trillium could get the settlement policy changed before the ROPP was adopted. In January 1986, lawyer Marc Sommerville, on behalf of Trillium Estates Ltd., formally asked the Minister of Municipal Affairs to defer any designation for the west side lands, or refer the matter to the Ontario Municipal Board (OMB).[11]

Meanwhile, the west side lands had attracted the attention of other developers. After September 1985, the Waterloo's city council had received requests for a deferral of designation of the west side lands from four additional landowners: Primus and Partners, Dreidger/Leatxch, C&H Kahlen and Frank Whibly. Council had initially rejected Trillium's petition, in part, because granting it would give Trillium an unfair advantage over other developers. However, as the referral requests increased to encompass the majority of the west side lands, this problem was eliminated.

Because the land owned by the developers had class 2 to 4 soils, there was no strong agricultural argument for maintaining the lands as Rural. As well, the council found that the developers' lands could probably be serviced easily by connecting into the Clair Creek sewage system and by building a pumping station on the Laurel Creek system. Council concluded that its reasons for maintaining the Rural designation for the west side lands had been overcome. In July 1986, Council asked the RMOW and the Minister of Municipal

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[10] City of Waterloo Planning Report PR85/129.

[11] Correspondence from Marc Sommerville to the Ontario Ministry of Municipal Affairs, January 31, 1986.

Affairs to defer designation of the west side lands, until it could complete land utilization and wastewater treatment plant expansion studies.

The deferral request meant acceptance that west side development was appropriate and that delay of redesignation was needed only to allow for completion of studies to determine the direction, location and extent of future growth. The Regional Municipality of Waterloo accepted the City's position and recommended to the Minister of Municipal Affairs, the deferral of designating all lands outside Settlement Policy A and within the City of Waterloo, pending the completion of studies to guide development. The City of Waterloo deferred designation of the subject lands in its own Official Plan.[12]

In June 1987, the Minister of Municipal Affairs gave conditional approval to the ROPP with the deferral of designation of the west side lands. The conditions required the Region to consider a range of housing types, and have regard for the impact of development on adjacent agricultural land, on woodlots, and on any part of an environmentally sensitive policy area (ESPA) that might be affected. As well, the region was required to consider any sand and gravel resources in the area.[13]

On July 25, 1988, Waterloo council approved the west side designation study which concluded that development in the west side lands would be required to meet the anticipated population growth. Due to the study's findings, Council requested that the ROPP be amended to classify the lands on the west side of the city, with the exception of the northwest corner, as Urban, under Settlement Policy A. The northwest corner was excluded due to environmental uncertainties.[14]

In September 1988, when Waterloo Council adopted a new city official plan, the recommendations from the west side designation study could not be included. Lands must be designated Urban in the ROPP before they can be designated as Urban in the city's plan. The redesignation in the ROPP was not expected to occur until after the new year. Moreover, the GRCA would require a master drainage study before redesignation. Also in September, two new developers, proponents of the Lacewood development and the Chase Subdivision, entered the playing field.[15]

The Emergence of New Concerns

New development on the west side would mean expansion of the sewer system and increased loadings for existing sewage treatment facilities. To address the City council's concerns regarding sanitary sewer servicing for the west side lands, a city wide sewer services study was initiated in February 1987.[16]

Potentially more serious worries centred on flood risks. In 1985, the GRCA, anticipating urban expansion, began to push for development of a master drainage plan for the west side lands. The Authority was concerned because the boundaries delineating the special policy area for flooding in Uptown Waterloo were based on the information that development

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[12] City of Waterloo Planning Report PR86/92.
[13] Regional Municipality of Waterloo, Planning and Development Committee, Minutes of a Public Meeting regarding Expansion of Settlement Policy Area A, October 28, 1988.
[14] City of Waterloo Planning Report PR88/103.
[15] City of Waterloo Planning Report PR88/37.
[16] City of Waterloo, Planning Report PR87/28.

would not occur west of Erbsville Road or upstream of the Laurel Creek Reservoir.[17] However, the growing developer interest in the area and the associated planning changes meant that further upstream development was probable and ordinarily, further development meant more impermeable surfaces (especially roofs, roads and driveways), more rapid snowmelt and rainfall run-off and increased risks of downstream flooding. A significant increase in west side stormwater runoff could cause the Laurel and Clair Creek systems to overflow downstream, especially in the floodplain areas of Uptown Waterloo. To evaluate this issue, a technical committee was established in 1987.

In a November meeting, the technical committee accepted that the only way to prevent suburban growth on the west side from increasing flood risks in the downtown urban area of the city was to adopt an objective of zero increase in storm water runoff. The committee also concluded that a master drainage plan was needed to determine accurately the quantity of stormwater which could feasibly be retained in the west side.[18]

In March 1988, the technical committee concluded that development on the Clair Creek watershed had a greater potential to generate downstream impacts on Uptown Waterloo than development in the Laurel Creek watershed. However, for any development upstream, it would be necessary to develop strategies for controlling stormwater runoff for every time it rained, instead of adopting the usual approach of just ensuring that sufficient channel capacity for a five to 100 year storm.[19]

Meanwhile, the GRCA was examining conventional options for decreasing the flood risk in the rest of the city. In 1988, the GRCA developed plans to channelize Laurel Creek from Erb Street to Weber Street in order to accommodate a 100 year flood. Residents from Brighton Yards Co-op and Black Willow Condominiums were skeptical of the GRCA's flood projection information, and felt that if flood control measures were required, channelization should be the last option.

Channelization work typically involved cutting down existing trees and building concrete embankments to contain the waters in case of a rare severe flood. The residents preferred the existing, more natural aesthetics of the area. They also expressed safety concerns, fearing that channelization would increase the river's discharge rate, potentially making it more difficult to save a fallen child.

Facing this strong opposition and recognizing that it would have to defend the channelization option publicly (the Municipal Sewage and Water Projects Class Environmental Assessment required consideration alternatives such as reduction of upstream storm water flows and included a mandatory public review period), the GRCA discontinued project planning.[20]

On October 26, 1988, the Region held a public meeting, under the *Planning Act*, on matters addressing the west side designation study. Two main public concerns became evident: the costs of rapid growth (and related issues) and the protection of the environment. Several citizens questioned the desirability of rapid growth and raised concerns about the quality of life. Elizabeth McKay stated that "growth should be slowed until the present

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[17] Lorrie Minshall, Grand River Conservation Authority, personal communication, January 19, 1994.
[18] Minutes of Technical Committee, Waterloo SPA -- Floodplain, November 18, 1987.
[19] Minutes of Technical Committee, Waterloo SPA -- Floodplain, March 23, 1988; Lorrie Minshall, Grand River Conservation Authority, personal communication, March 15, 1994.
[20] Ian Kirby, "Residents prepare for fight against creek improvements," *Waterloo Chronicle*, August 31, 1988.

needs and concerns of the citizens have been satisfactorily met." Bryce Kendrick questioned the validity of the population forecasts, because the population of Canada was not increasing at the rate cited. He also expressed uneasiness that neither the Ecological and Environmental Advisory Committee (EEAC) nor the Ministry of Natural Resources had been consulted until after the west side designation study was completed.

Many citizens were also worried about possible effects on the Region's Environmentally Sensitive Policy Areas. Some stated that they would prefer to see tax money spent on acquiring these lands to ensure their protection instead of servicing subdivisions. Issues of water quantity and quality and proper waste disposal were also raised. As a result of this meeting, the RMOW deferred the consideration of the Waterloo west side justification study and referred the issue back to the City to resolve growth costs and environmental protection.[21]

Responses from a New City Council

For Waterloo, 1988 was also an election year, through which Waterloo voters expressed their displeasure with the status quo. Brain Turnbull was elected as the new mayor of Waterloo, in part due to his expressed environmental commitments and sensitivity to the costs of rapid urban expansion.

After reviewing the information obtained from the Region's public meeting held in October, the new Waterloo Council decided that it would not consider extending urban settlement designation to the west side lands until the issues surrounding growth and the environment could be addressed. The Council decided it would first evaluate the issues surrounding growth. In February 1989, it established a growth strategy committee, consisting of councillors and citizens, to define appropriate city growth and outline a growth strategy.[22]

Meanwhile, challenges to the conventional means of reducing flood risks were spreading to other parts of the city. In 1989, City council debated channelizing Colonial Creek from the forks of the creek down to Grand River due to alleged erosion and flooding problems. Local residents of Malabar Drive disagreed that there were significant flood risks, and the channelization proposal was not pursued.[23]

Besides the problems with flooding and erosion, there was also considerable community concern about water quality and quantity and the general state of Laurel Creek. In an attempt to address the concerns, Mayor Turnbull held an urban watershed planning workshop in July 1989. The workshop outlined stormwater management principles, reviewed various advanced techniques implemented in Maryland, USA. Participants also went on a field tour of the Laurel Creek watershed.[24] Mayor Turnbull stated that he would ask Council to create a steering committee representing various government agencies to oversee the rehabilitation and restoration of Laurel Creek. From the beginning, the mayor believed that an official plan amendment might be needed to protect significant environmental features as part of the watershed and determine where development may or

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[21] Regional Municipality of Waterloo, Planning and Development Committee, Minutes of a Public Meeting regarding Expansion of Settlement Area A, October 26, 1988.
[22] Brian Trushinski, City of Waterloo Planning and Public Works Department, personal communication, November 8, 1993.
[23] Ian Kirby, "Leave the creek alone, residents," *Waterloo Chronicle*, June 14, 1989.
[24] Brian Turnbull, mayor, City of Waterloo, personal communication, January 10, 1994.

may not be permitted. He stated, "...we're going to take this official planning approach because that's where our power lies."[25]

Following through on its environmental platform, Waterloo Council adopted an "environment first approach" in October 1989. A planning report outlining the environment first strategy sanctioned the implementation of a multi-disciplinary approach in the preparation of a master drainage plan and watershed study in order to preserve the natural systems of Clair and Laurel Creek systems. The environmental first strategy report emphasized that this strategy was to be reflected in the master drainage plan, which would provide guidance for the integration of open spaces, storm water management ponds, major drainage systems, stream valleys and parks into a continuous green belt which would serve the dual purpose of recreation and water transport.[26]

Community involvement in the Laurel Creek issues became more formalized in January 1990, when the Laurel Creek's Citizen Committee was established. The committee's objective was to protect, rehabilitate and enhance Laurel Creek and its tributaries, by raising public awareness and working as an advisory board for Waterloo Council.[27]

Meanwhile, the requirements for development on the west-side were slowly being met. By January 1990, the city wide trunk sanitary sewer study requested by council in 1985 was essentially complete. It identified the need for a sewage pumping station in the vicinity of Beaver Creek Road and Fisher Hallman Road. This pumping station would service development west of Erbsville Road and a portion of Trillium Estates' subdivisions north of Columbia Street, which are part of the Beechwood West subdivisions. Construction of this pumping station was originally scheduled for late 1990s. Trillium Estates Ltd. requested that this date be advanced.[28]

In trying to determine the type and direction of growth Waterloo should encourage, the Growth Strategy Committee conducted a public survey. The questionnaires were distributed to respondents of all ages throughout the city. Ninety-one responses were received (54 from males, 37 from females). The results indicated a strong public support for controlling growth and protecting the environment. The following results were published in the Growth Strategy Committee's second interim report (February, 1990):

- 60 % of respondents favour municipal growth controls
- 63 % believe in more stringent controls to protect the environment
- 53 % would pay more taxes to protect natural areas
- 56 % would pay more for public transit
- 40 % are not willing to live in increased density areas; 39 % are willing
- 38 % would pay more taxes to improve roads[29]

Also in 1990, Waterloo Council commissioned a consultant to recommend alternatives for rehabilitating Silver Lake and Laurel Creek in Uptown Waterloo. This lake has special historical significance as the centre of the early city. Recognizing that the integrity of Silver Lake could be restored only in conjunction with work to rehabilitate and maintain the whole watershed, the consultant advocated an ecosystem approach to the Laurel Creek watershed.[30]

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[25] *Kitchener-Waterloo Record,* August 1, 1989.
[26] City of Waterloo, Planning Report PR89/89.
[27] *Waterloo Chronicle*, January 24, 1990
[28] City of Waterloo, Report PW/ER3710
[29] City of Waterloo, Report PD90/21
[30] Brian Turnbull, mayor, City of Waterloo, personal communication, January 10, 1994.

In August 1990, after 18 months of investigation and deliberation, the Growth Strategy Committee presented its recommended policy to council. This policy, approved in October 1990, included the following goals:

- planning should ensure appropriate infrastructure is provided;
- development should be sensitive to the environment;
- density should increase in urban areas to use land more wisely;
- growth should be planned in a way so that industrial, commercial and institutional sections of the city are balanced;
- planning for growth and change should be closely linked with planning for services; and
- growth should be planned to supply the full range of housing required by the community.

The Municipal Housing Statement, which ensures that an adequate number and type of housing are available for the projected population, was prepared in 1990 by city staff in cooperation with surrounding area municipalities to provide the basis for developing the official plans policies and zoning by-law provisions required to implement the Provincial Policy Statement on Land Use Planning for Housing. The Municipal Housing Statement concluded that both urban intensification and expansion of housing into the west side lands would be required to meet forecasted housing demands.[31]

In accordance with the *Planning Act*, a meeting to receive public input regarding the west side designation was convened jointly by the City and Region of Waterloo on March 25, 1992. The key events since the story's initiation were reviewed and Brian Trushinski of the City of Waterloo Planning Department outlined the scope and status of the Laurel Creek Watershed Study.

Paul Mason, RMOW's director of development, commented on the northwest corner of the west side lands. He reported that the region believed this area should remain outside the urban boundary for four reasons:

- the Region's land use analysis did not find the inclusion of north-west-corner was necessary for housing purposes,
- development of area would require services to cut through the ESPAs, and provincially significant wetlands and the impact of those services had yet to be addressed,
- available evidence suggested that the area is a significant regional groundwater recharge area, and
- the area is part of the Class 1 Sunfish Lake-Laurel Creek Wetland Complex and therefore subject to special preservation requirements under the provincial Wetland Policy Statement.

At the meeting, Trillium Estates Ltd. expressed uneasiness with the proceedings concerning the west side and voiced opposition to the special status both the city and the region were attributing to the area. Trillium questioned the justifiability of the delays, pointing to the provincial Policy Statement on Housing which requires municipal and planning boards to maintain at least a ten year supply of residential land at all times.

Brian Trushinski responded that special treatment of the area was desirable and essential, due to the city's new approach to sustainable development. Councilor Andrew Telegdi further clarified that the council was considering issues not normally deliberated upon, that

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[31] Regional Municipality of Waterloo and City of Waterloo, Minutes of a Joint Public Meeting regarding West Side Designation, March 25, 1992.

this approach was unprecedented and would probably be utilized by all municipalities in Ontario, and that the "special status" was justified.

Stamm Investments used this opportunity to express trepidation over Policy 5.37 in the ROPP which requires that the LCWS recommendations "...be completed and incorporated into the planning process of the affected area municipalities, GRCA and RMOW, and that related policies also be incorporated into area municipalities' official plans as appropriate." Stamm Investments did not feel that the Regional Council had the authority to require other agencies to adopt a policy which had not yet been formed.

Several citizens also used this occasion to repeat concerns over growth, environmental damage and related issues. Lori Squires Vanderzand of Erbsville expressed apprehension that an Urban west side designation would create an unstoppable chain reaction of runaway land speculation, increased woodlot prices and zone change applications. She also felt that a June 1 deadline for the completion of the LCWS unreasonable. She observed that the Region was in the process of a more detailed assessment of ground and surface water, which would take three to four years to complete, and that this was another reason to take a more cautious approach to redesignating all of the west side.

Jock McKay of the Kitchener-Waterloo Field Naturalists also voiced concern regarding policy 5.37. He questioned the rationale behind adopting a policy which was not known, and recommended postponing any land-use designation until the results of the LCWS were finalized.

Upon completion of the public meeting, city council concluded that the west side should be included in the Urban designation, and asked the Region to expand Settlement Policy A, to include the west side, including the northwest triangle. RMOW maintained its rural recommendation for the northwest corner lands.[32]

The Laurel Creek Watershed Study

In January 1990, in an attempt to address all watershed concerns comprehensively, Waterloo city council voted to endorse the idea of a "resource management plan" for the Laurel Creek watershed. This vote was the birth of the Laurel Creek Watershed Study (LCWS).

In November 1990, the city responded to expressed public concern about the environment with the mayor hosting a public meeting to consider using a roundtable approach to address environmental quality concerns, particularly on the west side. It was decided that approaching the issue in a piecemeal fashion would be ineffective due to the interdependence of the environment and other issues.

The Laurel Creek Watershed Study was initiated in January 1991 to identify opportunities and constraints to development in the watershed and to provide the basis for land-use policies to be established in the city's official plan.[33] A total of $830,000 was allocated to the work; the province contributed 55 percent, the region 35 percent and GRCA 10

[32] Regional Municipality of Waterloo and City of Waterloo, Minutes of a Joint Public Meeting regarding West Side Designation, March 25, 1992.
[33] City of Waterloo, Report PD91/126.

percent.[34] In February 1991, city council deferred designation of the west side until information was available from the Laurel Creek Watershed Study.[35]

After eighteen months of work, the LCWS was finally completed and received by Waterloo Council in September 1992. At the suggestion of the LCWS Roundtable, a number of clarifications and minor changes were incorporated into the Study. The final version was received by council in January 1993.

The overall purpose, concerns and issues surrounding the watershed led to the development of the following mission statement and five specific goals for the study. The LCWS' mission statement was "to achieve sustainable development which is aimed at maximizing benefits to the natural and human environments on a watershed basis." Goal 1 was to minimize the threat to life and the destruction of property and natural resources from flooding and preserve or reestablish natural floodplain hydrologic functions. Goal 2 was to restore, protect and enhance water quality and associated aquatic resources and water supplies. Goal 3 was to conserve, protect and restore the natural resources of the Laurel Creek Watershed (land, water, forest and wildlife). Goal 4 was to restore, protect, develop and enhance the ecological, historical, cultural, recreational and visual amenities of rural and urban areas within the watershed and particularly along stream corridors. Goal 5 was to protect, restore and enhance groundwater quality and quantity.[36]

The study was designed to be comprehensive in nature and to achieve four objectives:

- identify existing environmental and water resource process,
- identify the impacts due to existing uses in the watershed,
- identify the potential impacts of land use changes, and
- develop a management strategy for the watershed.

Both technical analysis and public participation were involved The technical analysis focused on answering a series of questions to develop a technically sound understanding of how the watershed functions:

- what natural features or characteristics of the watershed are important, and how do they influence overall environmental conditions?
- how does the watershed work, and what roles do the individual parts of the watershed (i.e., surface runoff, wetlands, groundwater, woodlots, etc.) play within the ecosystem?
- how sensitive or resilient is the watershed to change?
- what can we do to restore, protect or enhance the key watershed function and features?
- what targets must we use (i.e., temperature, bacteria levels, flows, etc.) to meet the overall goals and objectives for the watershed study?
- what overall management strategy is necessary to meet the goals and objectives of the watershed study?

Technical analysis involved in depth collection and consideration of field data, extensive computer modelling and interpretation of results.

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[34] Brian Trushinski, City of Waterloo Planning and Public Works Department, personal communication, January 14, 1994.
[35] City of Waterloo, Report PD91/10.
[36] City of Waterloo, Report PD92 54/57.

Study Findings

Four major areas were addressed in the Study: surface water quality, flooding, groundwater and terrestrial resources. The Study concluded that there were several areas within the watershed that required protection from increased environmental degradation. In addition, several significant environmental problems would have to be addressed if the watershed ecosystem were to return to a more healthy and sustainable state.

In summary, the key conclusions were as follows:

- The watershed system is "on the edge", with little resiliency to accommodate land use changes that typify a "business as usual" approach. New, more environmentally proactive and innovative approaches are required.

- Ten areas within the City of Waterloo exhibit significant flood potential. Increased stream flows will increase the risk of flooding downstream, especially in Uptown Waterloo.

- The existing reservoirs play a role in controlling flood risk.

- Natural storage areas that exist in the upper part of the watershed help to reduce flood flows downstream.

- The natural floodplain helps to control flood flows and should be preserved.

- A major cause of flooding in Uptown Waterloo is the runoff from existing urban area, particularly Maple Hill Creek and the University of Waterloo Campus. Additional paved area will increase flooding unless effectively controlled

- New development of Waterloo's west side or in the townships will increase flooding unless runoff flows, volumes and timing are controlled effectively.

- Although surface water quality throughout the watershed meets provincial requirements for most parameters (e.g.., metals, oils, pesticides), localized areas are degraded to the point of affecting fishery habitat, aesthetics and safe use by humans. The causes of these water quality concerns can be linked to land use, lack of storm water management and physical processes such as erosion.

- Water quality is generally good upstream of the Laurel Creek Reservoir and can support a cold water fishery.

- Erosion conditions exist along many stream reaches of the Watershed; however, significant problems are localized to eight site specific areas.

- Stream conditions are generally influenced by woodlot and wetland features in the watershed. These features play an important role in maintaining streamflows, water quality and fisheries habitat.

- Groundwater infiltration is imperative to replenish the regional aquifer used for municipal water supply and to sustain water flows in streams, thereby supporting associated aquatic habitat during dry summer months.

- The deeper aquifers (groundwater storage areas) provide water supply to residents. These areas extend beyond the Laurel Creek Watershed.

- A shallow aquifer system supplies flows to the creek during dry periods. Infiltration should be maintained in order to ensure that low flows and the fisheries habitat are protected and sustained.

- Sanitary and industrial waste contamination is evident in the urban portion of the watershed.

- Bacterial counts largely from waterfowl are of a sufficient level to warrant concern for body contact recreation activities at some times of the year at the Laurel Creek Reservoir, at most times at Columbia Lake and continuously at Silver Lake.

- There is a need to establish an interconnected greenspace system throughout the watershed which will support and enhance the ecological functions offered by the ESPAs.

On the basis of the study's findings, recommendations for achieving each of the study's goals were developed. The appropriate recommendations were later incorporated into the city's official plan. Some of the main items incorporated are discussed below.

The Study strongly advocated sub-watershed planning as an essential component of the municipal planning process. Twenty-seven sub-watersheds have been generally defined within the Laurel Creek Watershed. The sub-watershed studies will be undertaken during the preparation of the new district plans under the direction of the city, in consultation with the GRCA, MNR, the RMOW and any other public agencies having jurisdiction. The boundaries will be clearly defined at this stage.

The study recognized the importance of stormwater and erosion/sedimentation management requirements. These are to be implemented at the draft plan of subdivision and other development application stages. More detailed, site specific measures and targets that implement sub-watershed studies are to be achieved using best management practices.

The Study concluded that all lands within the Laurel Creek Watershed can be categorized into one of three levels of environmental constraint to development. These environmental constraint levels constitute the foundation of the watershed study. Constraint level 1 areas are vital to ecosystem health, and therefore both their form and function should be protected. Any development or other activities that would degrade their quality, impair their function or detrimentally change their form should be prohibited. There are three broad natural resource types included in this constraint level: wetlands, woodlots and stream corridors.

On constraint level two lands, the environmental form may be altered, but the ecological function is to be maintained. If development is desired in this area, the proof of burden that the ecological function can be preserved is upon the developer. Development may be permitted on constraint level three lands, but all activities are still subject to policies and recommendations designed to minimize the impact of human activities on the watershed ecosystem.[37]

The study recommended that to provide long-term protection to important environmental features and function, ecological buffers should be required for proposed development adjacent to all Constraint Level 1 Areas and Constraint Level 2 wooded and wetland areas.

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[37] Grand River Conservation Authority, *Laurel Creek Watershed Study,* January 1993.

Standard buffer widths have already been established in provincial guidelines for floodplain areas and perennial and intermittent streams. For the remaining environmental areas the study advocated that standard buffer widths do not necessarily guarantee long term ecological protection while in other instances they may be excessive. The study concluded that a variable buffer width can achieve environmental protection and be fair to those pursuing development opportunities. For determining the appropriate buffer width, the study stressed the importance of ascertaining the buffer ownership, identifying land use activities that could potentially be located within buffer areas, and establishing monitoring procedures.

The study recognized the need to establish a process for overall monitoring of the draft official plan amendment policies and their implementation in order to determine if the health of the ecosystem is being respected.

Finally, public participation was an important component of the study. It was not certain that the City had the legal authority to impose restrictions covering all of the areas of concern addressed by the watershed study. However, in the absence of a precedent to follow, the City decided to incorporate many of the ideas the public had always wanted to see implemented. Examples include ecological linkages between environmental features and natural vegetated buffers along perennial and intermittent watercourses and around high quality wooded lands.[38]

The Political Battle

By spring 1990, some developers were feeling frustrated with the lack of progress on designating the west side lands as Urban. They felt the additional time requests for studies and deferrals were nothing more than stalling tactics. Therefore, in the early spring of 1990, Trillium Estates Ltd. and Stamm Investments elected to take the adversarial route. They formally objected to the continued west-side redesignation deferrals and requested referral of this issue to the OMB.

This request was soon repeated by other developers: Canada United Property Ltd, which owns 41 hectares of land on the west side of Erbsville Rd south of Columbia, entered the case in May 1990, followed by Christine and Hans Kahlen in June 1990.[39] In June, Trillium asked the OMB to rule on two further matters: requests that the corner of Fischer-Hallman and Columbia Street be zoned Commercial and that certain city policies stated in the official plan be clarified to eliminate a possible interpretation that development of the west side can only occur after the completion of the Master Drainage Study.[40]

In July 1991, the OMB held a pre-hearing conference to consult with the stakeholders to determine a hearing date. The GRCA requested that the hearing be scheduled after the

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[38] Brian Trushinski, City of Waterloo Planning and Public Works Department, personal communication, January 14 and March 8, 1994.

[39] These steps are documented in City of Waterloo planning reports dated April 9, May 23, and June 12, 1990.

[40] Trillium Estates' request was sent to the Board on June 18, 1990 by the company's legal representatives, Gowling, Strathy and Henderson.

LCWS was completed, reviewed and approved in January 1993. The city suggested that the hearing commence in June 1992, after the study was completed, but not reviewed. The developers, tired of waiting, requested that the hearing commence in March 1992. In the end, the OMB decided upon a June 2, 1992 hearing date.

In order to provide the board with the city's land use designations, significant pressure was put on the city and consultant hired to conduct the Laurel Creek Watershed Study to have it completed before this date.

City staff believed that the broad land-use designation issue in the ROPP, which would then guide city planning, could be resolved prior to the OMB hearing. However, specific subdivision planning designations, which fall under the city's official plan, would require an addition year (until June 1993) because of the time needed for incorporating the LCWS recommendations into the city's official plan.[41]

In an attempt to shorten the OMB hearing, thus reducing costs and maintaining friendly relations, City of Waterloo staff initiated negotiations with the developers in April 1992. With the exception of Trillium Estates Ltd. and Stamm Investments Ltd., the developers accepted a 13 month timetable to process development applications for official plan changes on the west side lands. The developers agreed to withdraw their appeals until September 1993 on the condition that the west side lands would be designated Urban. RMOW subsequently approved this request.

In May 1992, Trillium Estates Ltd. held a public meeting, under the *Planning Act* but without endorsement by Waterloo Council, to receive comment on the proposed official plan and zoning by-law changes.

The OMB hearing commenced on June 2, 1992, and addressed only the Trillium lands (east of Erbsville Rd) as subdivision plans had already been drafted and Trillium wished to proceed. The Region and City went before the board requesting that the west-side lands be designated Urban and that certain policies (including that LCWS' conclusions to be incorporated into the ROPP) be adopted. These requests were approved by the OMB in September 1992.

The OMB added a condition that subdivision approvals could not be finalized until the RMOW had money for capital servicing and a master drainage plan was in place. It also added a new policy designating the northwest corner of the city as a special policy area, within the settlement policy A, but requiring a special environmental impact analysis (entitled a sensitive landscape study) before being designated as Urban in any of the city's district plans.[42]

Only one issue was not resolved at the June hearing. Trillium had completed its planning process to the subdivision level, and had asserted that the plans met the requirements of the Watershed Study. But as the hearing progressed, it became apparent that the Watershed Study's criteria were not adequately addressed. The OMB deferred decision on this matter until April 1993, to allow the stakeholders time to resolve issues outside of the board and to report back.

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[41] City of Waterloo, Report PD92/3.
[42] The Regional Municipality of Waterloo, Report PC92/136.

The OMB heard no testimony on the Watershed Study itself – the panel members stated the study was not on trial and the draft final report was accepted as written.[43]

The next step for Waterloo council was to incorporate appropriate LCWS recommendations into its Official Plan. Due to the imminent OMB hearing, scheduled for April, city staff proposed that the amendment to the Official Plan should be carried out in two phases. Phase 1 would focus on the undeveloped west side lands (with the exception of Trillium's lands) where the developmental pressures were greatest. Phase 2 would be started only after completion of Phase 1 and would pertain to the rest of the city within the Laurel Creek Watershed.[44]

City council held a public meeting on February 3, 1993, to discuss the LCWS and Phase 1 amendment. Already, mandatory adherence to the recommendations in the LCWS was being tested. Several landowners asked council to relax the proposed policy that would prohibit new roads from intruding into Constraint Level 1 areas. The affected landowners wanted Columbia Street to be extended west through a narrow portion of Forested Hills Environmentally Sensitive Policy Area 19 to service the most westerly developments. They felt that without the Columbia extension, their developments would be isolated from the rest of the city.[45] After careful assessment of all the alternatives, staff recommended that this request be denied. Phase 1 official plan amendment #16, which incorporated the LCWS recommendations into the official plan, was approved by council in March 1993.[46]

Meanwhile, Trillium and city staff worked together and resolved all issues pertaining to the Neighbourhood 4 subdivision except for one. Trillium had proposed to develop a 1.2 hectare portion of the Sunfish Lake, Laurel Creek Wetland Complex. In exchange, Trillium would provide 1.76 hectares of land adjacent to the wetlands for storm water management use.

This request was a test of MNR's recently established Wetland Policy Statement under the Planning Act, which states that all Class 1 Wetland Complexes must be protected. The area is also listed as Constraint 1 in the LCWS. City council initially accepted Trillium's proposal in March, but due to strong public outcry, re-debated and then deferred the decision. Trillium's lawyer argued that the area in dispute was not an important wetland, but an area of low environmental quality shrubs reverting back from being farmed 20 years ago.[47]

The OMB recessed the April hearing to allow the parties to find a mutually agreeable solution. The following compromise was achieved: 95% of the 1.2 hectare wetland would be saved; only a 0.15 hectare portion at its northern-most fringe would be sacrificed. The storm water management pond would be moved southwest to an existing monoculture pine plantation owned by GRCA. Much of the plantation would be preserved following completion of the stormwater management pond. In exchange, land owned by Trillium comparable to the size of the pine plantation would be used by the GRCA as an ecological link between the Laurel Creek Nature Centre and the wetland. Also, Trillium would be given permission to develop a number of residential lots along Beaver Creek Road. The required

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[43] Jock McKay, K-W Field Naturalists, personal communication, October 5, 1993.
[44] Brian Trushinski, City of Waterloo Planning and Public Works Department, personal communication, November 8, 1993.
[45] City of Waterloo, Report P&W/PG93-24.
[46] Brian Trushinski, City of Waterloo Planning and Public Works Department, personal communication, November 8, 1993.
[47] *Kitchener-Waterloo Record,* April 1, 1993

environmental assessment for development within 120 metres of a wetland was prepared by Trillium and approved by MNR.[48]

In October 1993, another OMB hearing was held to address land-use designations for the remaining west side lands. This hearing covered the lands owned by Stamm Investments and the remaining developers. A sizeable portion was designated residential, and lands along Erb Street West were designated commercial and industrial. The open space designations for all applicable west side lands had been approved earlier in official plan amendment #16.[49]

Current Status

A committee has been established to oversee the implementation of the LCWS recommendations. At the time of writing, completion of phase 2 official plan amendment for the watershed area is in process.[50] The sub-watershed terms of reference were approved March 1, 1994, and a sub-watershed study covering the area east of Laurel Creek Reservoir and in the North campus of the University of Waterloo is underway.[51]

The Watershed Study and the Planning Process

In Ontario, routine municipal planning is governed by the following hierarchical arrangement. At the top is the provincial Planning Act, which establishes the process for planning and development. Policy statements on matters of provincial significance (e.g., MNR's Wetland Policy) are consolidated under this Act. At the regional level, planning is directed by the Regional Official Plans Policy, which provides guidance to the municipalities on issues such as land-use designations, housing and transportation. Each lower tier municipality has its own, more detailed Official Plan. In turn, the municipal Official Plans further specified in the district plans, which depict major roads, parklands, density distribution, etc. Within the framework of the district plans are the draft plans of subdivisions and specific zoning. Each level of the hierarchy must adhere to the rules set by the one above it.

The Laurel Creek Watershed Study and associated decision making modified the existing planning process from the regional level down. The watershed recommendations are broad, policy directions with high priority on the environment. By adopting Policy 5.37 in the ROPP, requiring LCWS recommendations "...be completed and incorporated into the planning process of the affected area municipalities, GRCA and RMOW, and that related policies also be incorporated into area municipalities' official plans as appropriate," the Region established a structure in which environmental concerns were addressed from the outset of the municipal planning process. The lower tier municipal official plans and other planning decisions now must adhere to the watershed study's recommendations.

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[48] *Kitchener-Waterloo Record,* April 30, 1993; and Lorrie Minshall, Grand River Conservation Authority, personal communication, March 15, 1994.
[49] Brian Trushinski, City of Waterloo Planning and Public Works Department, personal communication, March 18, 1994.
[50] Brian Trushinski, City of Waterloo Planning and Public Works Department, personal communication, January 14, 1994.
[51] Chris Gosslin, Regional Municipality of Waterloo, personal communication, March 17, 1994.

The next tier consists of sub-watershed plans, for parts of Laurel Creek and its tributaries. These are to reflect the watershed plan, but provide guidance for site-specific resource concerns through detailed examinations of issues such as land use, density, location and effects of new impervious surfaces. Such work provides necessary information not only for planning decisions but also for any required assessments for roads and water and sewer projects subject to the *Environmental Assessment Act.* District plans fall under the sub-watershed studies, and will not be approved until the appropriate sub-watershed study is completed to the city council's satisfaction. Social and economic issues will be addressed at this stage in the planning process. A certain art is required in ensuring district and sub-watershed plans concur, because district plans are based on roads while sub-watershed studies are based on drainage basins. However, with coordination, this can be accomplished. District plans in turn guide subdivision plans and zoning.

Waterloo officials working with the watershed approach recognize that this modified planning process must remain flexible enough to allow for modifications to accommodate new experience and increased knowledge. Theoretically, the structure should be designed to address all concerns.[52]

In Ontario, watershed studies are presently being funded by provincial and municipal agencies in a similar manner as the LCWS. Sub-watersheds are to be funded by the developers. A trade off does exist at this stage; because the developers' resources are used burdens on the public purse are eased, but public control over the process is compromised. It is important to ensure that the consultants hired by the developers are competent, and that their work is subject to careful public and agency review.[53]

Overall, the stakeholders involved with the LCWS appear pleased with and optimistic about the LCWS planning process. The general view is that this is the correct planning approach to adopt.[54] Waterloo mayor Brian Turnbull believes residents of the City of Waterloo have a high regard for the LCWS and high expectations with respect to its implementation.[55]

This planning process may become the new standard in Ontario. The Commission on Planning and Development Reform (Sewell Commission), whose mandate was to "recommend changes to the *Planning Act* and related policy that would restore confidence in the integrity of the planning process..." advocated the ecosystem approach. In its final report, the Commission recommends that the *Planning Act* be amended to state the purposes of the Act are to guide land change in a manner that "fosters economic, environmental, cultural, physical and social well being..." and that all agencies at the provincial level and below, have regard to the protection of ecosystems. It also recommends that municipalities

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[52] Brian Trushinski, City of Waterloo Planning and Public Works Department, personal communication, January 14, 1994.

[53] David Cooper, Ontario Ministry of Natural Resources, personal communication, January 31, 1994.

[54] Brian Turnbull, mayor, City of Waterloo, personal communication, January 10, 1994; Liz Leedham, LCWS public participation coordinator, personal communication, January 12, 1994; Brian Trushinski., City of Waterloo Planning and Public Works Department, personal communication, January 14, 1994; Lorrie Minshall, Grand River Conservation Authority, personal communication, January 19, 1994; and David Cooper, Ontario Ministry of Natural Resources, personal communication, January 31, 1994.

[55] David Cooper, Ontario Ministry of Natural Resources, personal communication, January 31, 1994.

develop inventories of environmental resources, monitor environmental indicators and plan on a watershed basis.[56]

Benefits and Limitations of Watershed Studies

The Sewell Commission, MNR and MOEE have endorsed the watershed study idea and have recommended their use by other municipalities in Ontario. The basis for this recommendation is the belief that integration of ecosystem considerations into planning reduces the likelihood that land-use decisions will jeopardize ecosystem and human health. An economic advantage is potential savings that result from avoiding costly and difficult remedial actions.[57] This approach also remedies some of the main shortcoming of the *Environmental Assessment Act* by addressing cumulative effects and by covering both public and private sector activities.[58]

Once established, use of the watershed approach should provide a more efficient planning process for developers, planners and the public by laying out the ground rules clearly, prior to development applications. The watershed study will identify which areas may be developed and under what conditions.[59] Also, by integrating each government agency's resource concerns, the watershed plan should save developers and planners time and money by relieving them of much of their need to address each agency separately.[60]

Government agencies will also benefit from the watershed approach. Presently, government agencies are involved in the planning process at the plan review stage; they examine the plan and ensure concerns within their mandate are satisfied. However, if resource concerns were adequately addressed at the watershed and sub-watershed level, the agencies should be able to minimize their involvement in the review process and become more involved at the plan input and research stage. Municipalities will be able to use the sub-watershed study as a screening tool for what is appropriate to send to the provincial authorities for review, again saving time and money.[61]

However, like all approaches, watershed studies have their limitations and it is important to be aware of them. The main limitations with respect to the LCWS were time, money and to some extent, scientific data. Time may not be as significant a constraint in other watershed studies as in the Laurel Creek case where the study completion date was advanced due to the

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[56] Commission of Planning and Development Reform in Ontario, *New Planning for Ontario, Final Report,* Toronto: June 1993).
[57] Ontario Ministry of Environment and Energy and Ontario Ministry of Natural Resources, *Water Management on a Watershed Basis: Implementing an Ecosystem Approach* (Toronto: June 1993).
[58] Royal Commission on the Future of the Toronto Waterfront, *Regeneration,* (Toronto:RCFTW, December 1991).
[59] Paul Puopolo, president, Planning Initiatives, personal communication, January 28, 1994.
[60] Brian Trushinski, City of Waterloo Planning and Public Works Department, personal communication, January 14, 1994.
[61] David Cooper, Ontario Ministry of Natural Resources, personal communication, January 31, 1994.

OMB hearing.[62] But time will always be a factor insofar as the longer the study takes to complete, the more it is likely to cost.

Perhaps the most serious scientific information problem is that presently, for many watersheds facing development pressures, adequate baseline data on important natural features and processes do not exist.[63] This information is required as a basis for predicting and evaluating the potential effects of anticipated land-use changes, and as grounds for developing and supporting recommendation on central watershed protection issues (e.g. buffer widths).[64] Ideally, collection of baseline data would begin long before a watershed study was needed. Where this has not happened there is typically some tension between the need to obtain the essential scientific information for comprehensive decisions and the need to keep costs within reason. If an area is not under development pressure, it may be difficult to justify expenditures for careful identification of the natural resources and ecological functions of the area. However, in order to comprehend the interactions of that tract with an adjacent area for which development proposals may be expected, such information may be essential. Problems will occur later in the process (e.g., with the developers) if the absence of good baseline data means apparent needs for environmental protection cannot be firmly established.

It is also difficult for government agencies to make commitments when scientific knowledge is continually increasing on important factors such as wetland functions and groundwater recharge. It is for this reason that recommendations should err on the side of caution, and a high degree of flexibility should be maintained within the planning process.[65]

Finally, watershed and sub-watershed studies may be limited by an undue focus on water-centred concerns, to the exclusion of terrestrial or landscape values that cross watershed or sub-watershed boundaries. An illustration of this difficulty is provided by the case of the northwest corner of Waterloo's west side. Ecologically, the northwest corner is an extremely sensitive area. At the OMB hearings, the Region requested that a sensitive landscape study should be undertaken along with a sub-watershed study before development could occur in this area. The reasoning was that the area is part of a regional landscape which is habitat to significant species and that if the area were studied solely on a sub-watershed basis, this larger habitat would be considered in separate fragments, when it should be examined as a whole.[66]

A more desirable solution might be to ensure that any sub-watershed study's terms of reference are flexible enough to include consideration of ecological factors that extent beyond immediate sub-watershed boundaries. Although the addition of the sensitive landscape study to the sub-watershed has the same end result, delineating it as a separate study may unduly complicate the process of establishing a tool for more comprehensive, ecologically-based planning. Watershed and sub-watershed planning may be an imperfect tool for this purpose, but it is probably wiser to take a flexible approach to watershed and

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[62] Lorrie Minshall, Grand River Conservation Authority, personal communication, January 19, 1994.
[63] David Cooper, Ontario Ministry of Natural Resources, personal communication, January 31, 1994.
[64] Brian Trushinski, City of Waterloo Planning and Public Works Department, personal communication, January 14, 1994.
[65] David Cooper, Ontario Ministry of Natural Resources, personal communication, January 31, 1994.
[66] Chris Gosselin, Regional Municipality of Waterloo, personal communication, January 28, and March 17, 1994.

sub-watershed planning, adjusting and expanding where necessary, than to proliferate application of a confusing variety of approaches.

Watershed Planning and Public Understanding

The incorporation of the LCWS recommendations into the regional and city official plans, and into the work of the other authorities of the agencies involved, is probably sufficient to create a structure which will enable the realization of the LCWS' purpose – to achieve more sustainable development by maximizing benefits to the natural and human environments on a watershed basis. Whether or not the structure is used effectively is another matter. After discussions with various stakeholders, it appears the primary factor in determining the success or failure of implementing the watershed study is political and social will.[67]

Because municipal councils change every three years, it may be beneficial to establish a watershed committee with a continuing mandate to ensure compliance with watershed goals. One option may to expand the present implementation committee's responsibilities. This committee would provide both for public scrutiny and for continuity from one council to the next. It might also discourage a future council from minimizing the municipality's role in achieving and maintaining watershed goals.

Where required, planning documents such as zoning by-laws, conditions of plan of subdivision approvals and signed development agreement provide legal means by which the municipality may compel developers to fulfill the LCWS' goals. However, enforcement can be expensive to the taxpayer, and may hinder future relationships. Voluntary cooperation from developers is key, and is the route the Municipality of Waterloo prefers to take.[68]

For many developers and other interests, watershed and sub-watershed planning is a new concept. Consequently, it may be beneficial to have an educational session at the initiation of the study to alleviate any of their concerns and to indicate the likely benefits. Once developers and others understand why this process is being undertaken, the probability of them "buying in" increases.

Leaders of the LCWS work recognize that one of the principal ingredients in realizing the study goals and recommendations is having an informed public willing to minimize their potential impact on the environment of the watershed.[69] In the rural community, this would require such efforts as keeping a buffer between the cultivated land and the creek and not allowing cattle to enter the stream.[70] In the new subdivisions on the west side, this will include being aware of the purpose and location of the various management devices such as infiltration ponds, and the possible consequences of disturbing sensitive areas, such as

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[67] David Cooper, Ontario Ministry of Natural Resources, personal communication, January 31, 1994; and Brian Trushinski, City of Waterloo Planning and Public Works Department, personal communication, January 14, 1994.
[68] Brian Trushinski, City of Waterloo Planning and Public Works Department, personal communication, January 14, and March 18, 1994.
[69] Brian Trushinski, City of Waterloo Planning and Public Works Department, personal communication, January 14, 1994.
[70] Lorrie Minshall, Grand River Conservation Authority, personal communication, January 19, 1994.

woodlots. The municipality can play an important role in protecting sensitive areas adjacent to the subdivisions by working with the developers by situating paths along the exterior of the least sensitive areas and by planting natural barriers (e.g., hawthorn and raspberry bushes) in front of very vulnerable places.[71]

Once the subdivision becomes private property, there is little a municipality can do to prevent a homeowner from engaging in damaging activities such as filling in a dry-well or allowing pets to roam free in sensitive areas. The municipality may investigate locating some of the management devices (e.g., infiltration ponds) close to roads, so that they become a municipal responsibility, but this solution creates other difficulties, such as pollution from road runoff entering the groundwater.[72] It Waterloo's case, it appears the most feasible approach to circumventing potential problems on the west side is through public education and peer pressure. It may be beneficial to establish environmental representatives for each subdivision. These individuals would be very knowledgeable about the area, and would work closely with the implementation committee in ensuring that the goals of the watershed study continue to be met. The representatives would be individuals whom members in the community could approach if they have any questions or concerns and would help educate newcomers to the area.

The Roles of Senior Governments

In the Waterloo case, watershed planning was the product of municipal initiative. The success of this effort may lead to its emulation by other municipalities. But more widespread and consistent adoption of planning from an ecosystem perspective is likely to depend on action by the provincial government and its agencies. There are three broad areas where the province should play a key role:

- implementation of laws and policies which promote ecosystem planning and intermunicipal cooperation,
- development and maintenance of information systems (including standardizing data collection methods and integrating reporting), and
- promotion and assessment of research on proposed technology and other solutions related to land-use matters.

In the LCWS, a large portion of the required money and time was spent on gathering or determining the required scientific/technical information (e.g., the temperature range for a cold water stream). A substantial amount of original research or investigation was conducted in the watershed study, and many stakeholders felt this analysis was beyond the scope of the study. There were also difficulties with data inaccessibility.[73] For example, it was known that studies on water quality had already been performed, but it was not known

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[71] David Cooper, Ontario Ministry of Natural Resources, personal communication, January 31, 1994; and Chris Gosslin, Regional Municipality of Waterloo, personal communication, January 28, 1994.

[72] Chris Gosslin, Regional Municipality of Waterloo, personal communication, January 28, 1994.

[73] Brian Turnbull, mayor, City of Waterloo, personal communication, January 10, 1994; and Lorrie Minshall, Grand River Conservation Authority, personal communication, January 19, 1994.

who had performed them or where the information was presently located. Often, the data retrieved were in different formats, or the information was not georeferenced.[74]

The MNR and MOEE could streamline watershed studies significantly by collecting and creating a data base of available information which can be easily accessed. Costs could also be reduced if these provincial agencies were to develop methods to anticipate priority information collection needs and to integrate the resulting information. For example, MNR and MOEE should be investigating best management practices for effectively handling warm stormwater discharging into cold water streams. As knowledge in these areas increases, related information costs are expected to decline sharply.

The province should also investigate means of resolving conflicting watershed objectives. For example, encouraging stormwater infiltration in urban areas can help reduce the potential for flooding. But this raises the issue of groundwater quality since urban runoff may contain oil and other substances which could contaminate the groundwater. Before extensive stormwater infiltration methods are implemented, the minimum quality and the maximum quantity of the urban stormwater safe for infiltration should be determined, along with how these standards can be maintained.[75]

Minimally, the province should encourage and assist municipalities to define the land features within their boundaries and conduct a base inventory. This information will be required if a municipality decides to conduct a watershed study at some time in the future. Even if the municipality does not decide to conduct a watershed study, these data will aid the municipality in its planning decisions, enabling it to maintain the ecosystem's health and integrity and avoid future rehabilitation costs. For example, some years ago the City of Kitchener zoned an area as industrial in order to promote economic expansion. However, subsequent investigations determined that the area is important aesthetically and ecologically and the city is now trying to purchase the land back from the various landowners, with some difficulties. If land definitions and base inventories had been conducted previously, this costly and awkward situation might have been avoided.[76]

The federal government, unless it wishes to establish a national policy on conducting ecosystem approaches, will not directly affect watershed planning. However, it should review its legislation and, especially, its fiscal policy, remove elements which do not promote environmental considerations, and institute ones which do. For example, landowners are now subject to capital gains tax when donating land to approved non-profit corporations or trusts. Instead, the federal government should allow landowners to claim the full value of the land as an income tax credit. This would encourage the donation of ecologically sensitive land to municipalities, which will assist municipalities in protecting these areas.[77]

If implemented, these provincial and federal steps would facilitate greater and more effective use of watershed-based planning by enhancing the abilities of municipalities to carry out watershed studies and to act on their findings. Gradually, as ecosystem considerations become conventional aspects of planning and development, the need for legal obligations and enforcement will decline.

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[74] Liz Leedham, LCWS public participation coordinator, personal communication, March 9, 1994.
[75] Lorrie Minshall, Grand River Conservation Authority, personal communication, January 19, 1994.
[76] Chris Gosslin, Regional Municipality of Waterloo, personal communication, January 28, 1994.
[77] Brian Trushinski, City of Waterloo Planning and Public Works Department, personal communication, January 14, 1994.

Planning and Carrying Out Watershed Studies

A watershed study should be part of a partnership approach to environmental planning. From the initiation of the work, the participants should include as many as possible of the relevant interests, including government agencies, landowners and developers, and citizen groups. Because watershed studies are meant in the end to provide broad guidance for planning decisions by government agencies, the official partnership of watershed study sponsors should include all agencies which have jurisdiction over some component of the study.

While this partnership does not necessarily have to be formal, experience in the Laurel Creek case underlines the importance of ensuring that the participating agencies clarify any overlaps among their mandates and clearly identify each agency's role in the watershed study process at the study's initiation.[78] It is also important that the agencies begin with a clear mutual understanding of the ground rules for the joint work.

The roundtable technique, formal or informal, appears to be the most appropriate method for agency organization for a watershed study. Roundtable deliberations can be very time consuming, but the general consensus among Laurel Creek participants is that this approach will prevent future conflicts and costly delays at the bylaw or development approval stages. In the Laurel Creek case, the key public agency stakeholders needed only eight hours to achieve consensus for the OPA for phase 1 implementation.[79]

The main criticisms of roundtable experience centre on the number of unproductive meetings. To maximize the effectiveness of the roundtable process, it is extremely important to define clearly at the outset the roundtable's role and the roles of any committees established, so that valuable time is not used establishing roles once the process has started. A strict agenda should be prepared for each meeting and the consultants' contributions should be focused. A capable chairperson is essential in directing the discussions to the items on the agenda and in maintaining balanced participation.[80]

Extensive background work is needed to ensure the study addresses the main issues of concern before generating the study's term of reference.[81] All watershed studies examine the overall hydrogeology of the area and the natural resources/ecosystem base, but in every case there will be site-specific issues within these categories and other important concerns to

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[78] Liz Leedham, LCWS public participation coordinator, personal communication, March 9, 1994.
[79] Brian Trushinski, City of Waterloo Planning and Public Works Department, personal communication, January 14, and March 18, 1994.
[80] Paul Puopolo, president, Planning Initiatives, personal communication, January 28, 1994; and Liz Leedham, LCWS public participation coordinator, personal communication, January 12, 1994.
[81] Lorrie Minshall, Grand River Conservation Authority, personal communication, January 19, 1994; and David Cooper, Ontario Ministry of Natural Resources, personal communication, January 31, 1994.

be addressed.[82] The public and other stakeholders should be consulted at this stage to ensure no significant issue is overlooked. If a concern is added to the terms of reference, all stakeholders must be made aware of the implications.

When determining the type, quantity and detail of the information to be collected in the study, it is important to recognize the limits of time, money and other resources. Additional information should be collected only if it has the potential of indicating an action not previously foreseen or of some practical use in the monitoring program.[83]

Significant to the success of a watershed study is an experienced coordinator who will organize the work and link the contributions of experts from various disciplines. It appears to be commonly assumed that each individual task will be completed satisfactorily and somehow all the results from the different disciplines will merge more or less automatically. Unfortunately, the integration is seldom easy and a co-ordinator is typically needed to make sure all the parts come together. This was the experience in the LCWS case, where disorganization was a problem until a coordinator was found.[84]

As noted above, a broad range of stakeholders should be invited to participate in the initiation of the study and to and guide its implementation. However, there is a trade off between including all of participants required to ensure a comprehensive and credible study, and the need to keep active participant numbers low enough to make the process manageable.

One representative and a designated backup person should be selected from each interested stakeholder group to form a core group of people who would act in an advisory capacity throughout the study. It is important that this core group be balanced with respect to interests, and its and the member's roles clearly defined and understood. If the potential stakeholders are too numerous, coalitions of groups should be encouraged or key groups covering the numerous related interest groups should be selected. It is also important to try and select groups that have good track records for wanting to get the job done and that recognize the need for compromises given the consensus-building character of the exercise. Education sessions for the public are important to aid them in making better informed decisions.[85]

Manageability imperatives, along with time and money limitations, can tempt authorities to scale down the public participation efforts. However, the public will be essential to the final acceptance and implementation of any watershed study, and involving the public effectively from the beginning will save time and money later on. At the end of the LCWS case, two new goals, seven new objectives and 82 new policies were introduced into official plan amandment #16 with no public appeal to the OMB. City of Waterloo planner Brian Trushinski believes that this is because the stakeholders were included fully in the process that identified the desired changes. In contrast, relatively weak public consultation efforts

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[82] To provide the necessary information base in the Laurel Creek case, technical studies were conducted in five areas: hydrology/hydraulics, hydrogeology, terrestrial resources, surface water quality, and aquatic systems.

[83] Lorrie Minshall, Grand River Conservation Authority, personal communication, January 19, 1994.

[84] Brian Turnbull, mayor, City of Waterloo, personal communication, January 10, 1994.

[85] Liz Leedham, LCWS public participation coordinator, personal communication, January 12, 1994 Brian Trushinski, City of Waterloo Planning and Public Works Department, personal communication, March 18, 1994.

were made in the Hanlon watershed study in Guelph, which now is experiencing delays because members of the public feel important issues have been overlooked.[86]

Approximately 12 to 15 percent of the study's budget should be dedicated to public participation, consultation and education.[87] To maximize effectiveness and minimize cost, Liz Leedham , public participation coordinator for the LCWS, suggests that an information package and invitation to participate should be sent to a wide range of stakeholders including business associations and public interest groups at the study's initiation. For the LCWS, stakeholders were identified though the phone book and social directory.

Not all forms of public participation are equally productive or equally suitable for every case.[88] The LCWS's public participation initiatives consisted of a consultant hotline, open house, workshops, newsletters and questionnaires.

Most participants appear to feel that the workshops were the most effective public participation method. This is where the study team received the most feedback, and where the consensus possibilities emerged. Liz Leedham feels that one or two workshops with the core group once the members have a good understanding of the issues, will be quite valuable. To maximize workshop effectiveness, the participants should be consulted on focused, specific issues while openness to unanticipated new ideas and perspectives is maintained. This requires a good facilitator.

The consultant hotline was a valuable mechanism for easing people's concerns. If funding is limited, maintaining a hotline for the whole study period may not be possible. But it is important to ensure the public can ask questions and obtain answers (or, at least, information on how to get the answers). One option is finding a volunteer who will take phone calls during a designated time period.

Open houses are in some cases held to meet legal requirements. In the Laurel Creek case, however, they were not very effective means of receiving public input. Questionnaires are also of limited value; response rates are usually low unless a follow-up is performed, and this is expensive.

An important criterion on the selection of consultants is their competence in the public participation aspect of the study, in particular their ability to communicate to the public in a manner which the average person will comprehend. If feasible, it may be beneficial to have an accessible and well-informed liaison person to act as a bridge between the consultants and the public.

The public should be actively involved even after the watershed study is complete. The success of achieving the watershed and sub-watershed goals will depend on those living within the watershed, and means to keep the community involved and aware should be sought. One possible method is to involve community groups in follow-up monitoring,

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[86] Brian Trushinski, City of Waterloo Planning and Public Works Department, personal communication, March 18, 1994.

[87] Brian Trushinski, City of Waterloo Planning and Public Works Department, personal communication, January 14, 1994.

[88] The eco-research project, based at the University of Waterloo, is investigating various environmental issues in the Grand River Watershed Bioregion. One of its areas of study is assessment of different public participation and "stakeholder" consultation processes to determine the best method for communicating information to interested parties, and incorporating their input into watershed decision making Liz Leedham, LCWS public participation coordinator, personal communication, January 12, 1994.

especially in areas where there may not be sufficient funds for careful supervision and direct enforcement by the responsible authorities.[89]

Monitoring is a critical component which never seems to receive the attention it deserves, usually due to funding limitations.[90] However, without monitoring it is not possible to determine the effectiveness of the environmental planning or implementation. Required monitoring work should include periodical examinations of infiltration basins to determine stream water quality, the effectiveness of mitigation measures, and needs for additional adjustments or maintenance. Innovative partnerships may ensure that monitoring is comprehensive. Developers may be persuaded or required to perform some of monitoring. In the LCWS case, Trillium has agreed to monitor its subdivisions up to two years after completion. As suggested above, community groups can be involved in routine inspections. If a university or perhaps even a high school is nearby, routine monitoring can be incorporated into the curriculum, giving students practical experience as well as an appreciation of their surrounding area.

Conclusion

At least in the eyes of its participants, the LCWS was a successful experiment in watershed-based ecosystem planning. It was initiated in part because of the inadequacy of the prevailing law and practice of land use planning and environmental assessment in Ontario and it was, to some extent, constrained by this legal context. At the same time, however, it demonstrated that a committed municipality, working in partnership with other stakeholders, could adopt an innovative ecological approach within the existing framework.

Although it is too early to measure its success on the ground, the LCWS has significantly enhanced the environmental sensitivity of land use planning, and has probably reduced the longer term economic costs of urban expansion, on the west side of Waterloo. It represents an approach that should be appropriate for adoption by other municipalities with sufficient political will.

The difficulties which arose during this process were for the most part, "first time" problems. These should lessen as municipalities and associated provincial agencies become more proficient at conducting watershed studies. The most serious barriers to wider application of watershed planning may be the costs of necessary studies, especially in times of severe financial constraint for Ontario municipalities. Arguably, such studies are good investments even for seriously cash-strapped municipal authorities. In the Laurel Creek case, for example, savings from downstream flood-proofing cost reduction may well be much greater than the costs of the LCWS. Nevertheless, it would be desirable for provincial agencies to help reduce ecosystem study costs by assuming greater roles in information gathering and integration as discussed above.

The LCWS was an admirable municipal initiative that could and should be copied by other municipalities. But if broader application is to be achieved, the province too should act

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[89] Brian Trushinski, City of Waterloo Planning and Public Works Department, personal communication, January 14, 1994

[90] David Cooper, Ontario Ministry of Natural Resources, personal communication, January 31, 1994.

to encourage watershed planning, to adopt comparable procedures for areas of provincial responsibility and to improve the information base for ecosystem studies.